SLOVENSKI STANDARD
oSIST prEN 1978:2021

01-oktober-2021

Baker in bakrove zlitine - Bakrove katode

Copper and copper alloys - Copper cathodes

Kupfer und Kupferlegierungen - Kupfer-Kathoden

Cuivre et alliages de cuivre - Cathodes en cuivre

Ta slovenski standard je istoveten z: **prEN 1978**

ICS:

77.150.30	Bakreni izdelki	Copper products

oSIST prEN 1978:2021 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 1978

August 2021

ICS 77.150.30

Will supersede EN 1978:1998

English Version

Copper and copper alloys - Copper cathodes

Cuivre et alliages de cuivre - Cathodes en cuivre

Kupfer und Kupferlegierungen - Kupfer-Kathoden

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 133.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CEN in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. prEN 1978:2021 E

Contents

Page

European foreword

This document (prEN 1978:2021) has been prepared by Technical Committee CEN/TC 133 “Copper and copper alloys”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 1978:1998.

In comparison with the previous edition, the following technical modifications have been made:

a) The reference to EN 1655 has been replaced by EN ISO/IEC 17050-1 and EN ISO/IEC 17050-2.

This is one of a series of European Standards for products manufactured from refined copper grades. Other products are specified as follows:

EN 1976, *Copper and copper alloys — Cast unwrought copper products*

EN 1977, *Copper and copper alloys — Copper drawing stock (wire rod)*

Introduction

This document was prepared to combine the various requirements and methods of test for copper cathodes, previously dealt with in a range of separate national standards.

Copper cathodes are intended for melting. Cu-CATH-1 (CR001A) is primarily intended for the production of high conductivity copper, such as for drawing stock. Cu-CATH-2 (CR002A) is intended for the production of other wrought products for electrical and general purposes.

1 Scope

This document specifies the composition and property requirements for cathodes of two copper grades, designated Cu-CATH-1 (CR001A) and Cu-CATH-2 (CR002A).

Annex A (normative) describes methods for sampling cathodes for use in cases of dispute between the purchaser and the supplier. Annex B (informative) gives information on the relationships between electrical resistivity and conductivity of copper.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60468, *Method of measurement of resistivity of metallic materials*

EN 16117-2, *Copper and copper alloys — Determination of copper content — Part 2: Electrolytic determination of copper in materials with copper content higher than 99,80 %*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at https://www.electropedia.org/
- ISO Online browsing platform: available at https://www.iso.org/obp

3.1
cathode
flat, unwrought product made by electrolytic deposition

3.2
lot
quantity of copper cathodes weighing over 25 t and up to and including 200 t, consisting of one consignment, or part of one consignment, produced by one refinery

3.3
bundle
total amount of a certain number of cathodes, typically 20 to 60, stacked together and secured, generally by steel bands

3.4
sample cathodes
number of cathodes randomly selected from the lot, and considered in total to be representative of the lot

3.5
cathode sample
portion of one of the sampled cathodes (see 3.4) obtained by systematic cutting of vertical strips

3.6
bulk sample
sample produced by melting and casting the cathode samples (see 3.5) obtained from all the sampled cathodes into a suitable mould (or moulds)

Note to entry 1: This is considered to be representative of the lot.

3.7
analysis sample
representative fractions of swarf taken from the swarf arising from drilling, milling or sawing the bulk sample castings (see 3.6)

4 Designations

4.1 Material

4.1.1 General

The material is designated either by symbol or number (see Table 1).

4.1.2 Symbol

The material symbol designation is based on the designation system given in ISO 1190-1.

4.1.3 Number

The material number designation is in accordance with the system given in EN 1412.

4.2 Product

The product designation provides a standardized pattern of designation from which a rapid and unequivocal description of a product is conveyed in communication. It provides mutual comprehension at the international level with regard to products which meet the requirements of the relevant European Standard.

The product designation is not substitute for the full content of the standard.

The product designation for products to this document shall consist of:

- denomination (cathode);
- number of this document (EN 1978);
- material designation, either symbol or number (see Table 1).

The derivation of a product designation is shown in the following example.

EXAMPLE Cathode conforming to this standard, in material designated either Cu-CATH-1 or CR001A, shall be designated as follows:

Cathode EN 1978 – Cu-CATH-1

or

Cathode EN 1978 - CR001A

Denomination

Number of this European Standard

Material designation

5 Ordering information

In order to facilitate the enquiry, order and confirmation of order procedures between the purchaser and the supplier, the purchaser shall state on his enquiry and order the following information:

a) quantity of product required (mass);

b) denomination (cathode);

c) number of this document (EN 1978);

d) material designation (see Table 1).

It is recommended that the product designation, as described in 4.2. is used for items b) to d).

In addition, the purchaser shall also state on the enquiry and order any of the following, if required:

e) the dimensions and tolerances required, if the cathodes are to be supplied cut to size (see 6.3);

f) whether a declaration of conformity is required (see 9.1);

g) whether an inspection document is required, and if so, which type (see 9.2).

EXAMPLE Ordering details for 100 t of cathode conforming to EN 1978, in material designated either Cu-CATH-1 or CR001A:

100 t Cathode EN 1978 – Cu-CATH-1

or

100 t Cathode EN 1978 – CR001A

6 Requirements

6.1 Composition

The composition shall conform to the requirements for the appropriate grade given in Table 1.

6.2 Electrical properties

The electrical properties shall conform to the requirements for the appropriate grade given in Table 2. The tests shall be carried out in accordance with 8.2.

NOTE Mass resistivity is the mandatory electrical property requirement in this document. The relationship between mass resistivity and the corresponding volume resistivity and conductivity is given in Annex B.

6.3 Dimensions and tolerances

The cathodes shall be either whole or cut to sizes as agreed between the purchaser and the supplier and stated in the purchaser's order [see Clause 5 e)].

6.4 Surface condition

Cathodes shall withstand ordinary handling without breakage. They shall be reasonably free from nodules, outgrowth edges and from all extraneous materials such as electrolyte residues, dirt, grease and oil.